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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/091,402	03/07/2002	Hajime Itoh	220302US0	8608

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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

LOPEZ, CARLOS N

ART UNIT	PAPER NUMBER
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1731

DATE MAILED: 03/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/091,402

Applicant(s)

ITOH ET AL.

Examiner

Carlos Lopez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2 IDS.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

- 1) Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant in page 11 line 24, defines pressure P of the molten glass as being "a certain very small portion of this flowing molten glass". It is unclear to which small portion of the molten glass is being referred to in claim 1. If the small portion of the molten glass is the portion of the molten glass at the surface of the molten glass, the pressure P observed by said portion is considerably less than the pressure of the portion of the molten glass at higher depths.

For examination purposes the pressure P as recited in claim 1 is being treated as the pressure observed by any portion of the molten glass, at any depth of the molten glass.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim Rejections - 35 USC § 103

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2) Claims 1-4 and 8 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Tanaka et al (Refining of Glasses under Sub-Atmospheric Pressures). Tanaka discloses vacuum refining a glass melt at sub-atmospheric pressure (Abstract). As shown in figure 3, batch material is melted inherently at a pressure P at melter (1). Then a stream of the resulting molten material is vacuumed degassed in vessel, which is at sub-atmospheric pressure P_A . The vessel wherein the molten glass is degassed is at a pressure P_A of 0.18 atm and has a water content (W) of .022wt % (See Example 2). The claimed P of the molten glass as defined by applicant in page 11 line 24 of being a "pressure of a certain very small portion of this flowing molten glass" is deemed as the very small portion of the glass at the top of the molten flow, which would be equal to .18atm, the pressure of Tanaka's vessel. Hence, Tanaka's very small portion of glass at the top of the molten flow has a pressure P of .18atm for which it follows applicant's equation of P as recited in claim 1.

Instant claim 1 recites $P = 6.1W + .06\text{atm}$ wherein:

.18atm(Tanaka's very small portion of molten glass at the top of the molten flow) = $6.1(.022)\text{atm} + .06\text{atm}$.

Alternatively, if applicant considers the pressure $P = 6.1W \text{ atm} + .06\text{atm}$ to be the maximum pressure observed by the molten glass being degassed, it is deemed that since the depth of the molten glass as shown in figure 3 is very small it can reasonably be concluded that the maximum pressure of said molten glass would be equal to the pressure of the vessel; the pressure of the molten glass located at the bottom of the vessel is negligible and the pressure of through out the molten glass, i.e. the pressure of the molten glass at the base of the vessel, would be equal to the pressure of the vessel.

In regards to claim 2, the glass is held for 50 minutes, see page 76 line 5.

In regards to claim 3, the melting of the batch material is done at atmospheric pressure, 1atm.

As for claims 6-7, Tanaka does not disclose the presence of glass additives.

As for claim 8, Tanaka discloses SO₃ content of .39% in page 76, paragraph 3. See also page 75, line 4 disclosing a SO₃ content of .31%.

3) Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al (Refining of Glasses under Sub-Atmospheric Pressures) in view of Yanagisawa et al (US 6,251,811). Tanaka is silent disclosing the claimed silica glass composition. However, the selected composition of the molten glass would depend on the desired properties and intended use of the resultant glass. As shown by Yanagisawa in column 4, glass composition intended for a cathode ray tube preferably consist of the following:

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SiO ₂	45 to 60 wt %,
Al ₂ O ₃	0 to 6 wt %,
Na ₂ O	3 to 11 wt %,
K ₂ O	3 to 11 wt %,
PbO	5 to 24 wt %,
SrO	1 to 14 wt %,
BaO	1 to 21 wt %,
CaO	0 to 5 wt %,
MgO	0 to 5 wt %,
ZnO	0 to 2 wt %,
ZrO ₂	0 to 4 wt %,
TiO ₂	0 to 0.9 wt %,
Sb ₂ O ₃	0 to 1 wt %.

Thus at the time the invention was made it would have been obvious to a person of ordinary skill in the art to have Tanaka' method of process a glass melt with the glass composition of Yanagisawa in order to make cathode ray tubes.

4) Claim 1-3 and 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishimura et al (Re. 36,082). Ishimura discloses vacuum refining a glass melt at sub-atmospheric pressure (Abstract). As shown in figure 3, batch material is melted inherently at a pressure P in melter (1). Then a stream of the resulting molten material is vacuumed degassed in vessel 4, which is at sub-atmospheric pressure Pa. The vessel wherein the molten glass is degassed is at a pressure of 1/20 to 1/3 atm. The claimed P of the molten glass as defined by applicant in page 11 line 24 as being a "pressure of a certain very small portion of this flowing molten glass" is currently deemed as the very small portion of the glass at the top of the molten flow, which would be equal to the pressure of Ishimura's vessel. Ishimura is silent disclosing the water content of the melt glass. However, Examiner takes official notice as evidenced by

Pecoraro (US 4,919,700, col. 4, lines 16ff), that conventional glass melts typically have water content of .02 to .04% weight. Hence absent any indication by Ishimura, it is assumed that Ishimura's glass melt has the conventional water content (W) of .02 to .04%. Thus, treating said glass melt at the disclosed pressure range of 1/20 to 1/3 atm would result in treating the glass melt as recited in applicant's instant claim 1, since the water content of a conventional melt at .02% would result in a pressure P of .18atm; A pressure P of .18 atm falls within the disclosed range of Ishimura wherein $P = .18\text{atm} = 6.1 (.02)\text{atm} + .06\text{atm}$. At the time the invention was made it would have been obvious to a person of ordinary skill that Ishimura's vacuuming degassing of conventional glass melt, which as shown above is in the range of .02 to .04 weight %, at a pressure of 1/20 to 1/3 atm results in a pressure P as defined by applicant in page 11 line 24 to read on applicant's claim 1.

In regards to claim 2, the glass is being degassed for .5 to 2 hours (Ishimura col. 8 line 18).

In regards to claim 3, the melting of the batch material is done at atmospheric pressure, 1atm.

As for claims 6-7, Tanaka does not disclose the presence of the claimed glass additives.

5) Claims 1-3 and 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawaguchi et al (US 6,332,339). Kawaguchi discloses a method for vacuum degassing a molten glass flow (Abstract). The method comprises of first melting raw glass material at pressure P, in Kawaguchi's case at 1 atm (Col. 5 lines 34-56). The

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molten glass is then degassed at a pressure of .05atm to P-.06atm (Col. 6, lines 28-39). Since the depth of the molten glass ranges from 100mm to 300mm, it is considered that the pressure of the molten glass would not vary at different depths of the molten glass and thus it would be equal to at most the pressure at which is being degassed, .05atm to P-.06atm. As noted above, Examiner takes official notice as evidenced by Pecoraro (US 4,919,700, col. 4, lines 16ff), that conventional glass melts typically have water content of .02 to .04% weight. Hence absent any indication by Kawaguchi, it is assumed that Kawaguchis' glass melt has the conventional water content (W) of .02 to .04 %. Thus, treating said glass melt at the disclosed pressure range of .05atm to P-.06atm would result in treating the glass melt as recited in applicant's instant claim 1, since the water content of a conventional melt at .02% would result in a pressure P of .18atm ($P = .18atm = 6.1 (.02) atm + .06atm$) which is clearly above the pressure observed by Kawaguchis' molten glass of .05atm.

In regards to claim 2, the glass is being degassed for .12 to 4.8 hours, see Abstract.

As for claims 6-7, Tanaka does not disclose the presence of the claimed glass additives

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References A and N in PTO-892 have been cited to show the state of the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carlos Lopez whose telephone number is 571.272.1193. The examiner can normally be reached on Mon.-Fri. 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571.272.1189. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CL

A handwritten signature in black ink, appearing to read 'Peter Chin', with a stylized, flowing script.

PETER CHIN
PRIMARY EXAMINER